What is claimed is:

1. A method of making an assay article for use in biopolymer detection comprising the steps of:

(a) providing a biopolymer;

(b) providing a modified substrate; and

(c) contacting the biopolymer with a surface of the substrate under a condition sufficient for a direct adsorption of the biopolymer on the surface of the substrate.

2. The method of claim 1, wherein the biopolymer is unmodified prior to the contacting step.

3. The method of claim 1, wherein the biopolymer is modified prior to the contacting step.

4. The method of claim 1, wherein the substrate is selected from the group consisting of organic polymers, their analogs, blends and copolymers selected from the group consisting of polycarbonates, polyethylenes, polypropylenes, polymethacrylates, polymethylpentenes, polysulfones, polytetrafluoroethylenes, and polyvinylidene difluorides.

5. The method of claim 4, wherein modified substrate is aminated polypropylene.

6. The method of claim 1, wherein the substrate is in a form selected from the group consisting of: foams, filaments, threads, sheets. films, slides, gels, membranes, beads, plates, and like structures.

7. The method of claim 1, wherein the contacting step is carried out by a technique selected from a group consisting of: jet printing, solid or open capillary device contact printing, microfluidic channel printing, silk screening, printing using devices based upon electrochemical or electromagnetic forces, and manual spotting.

8. The method of claim 1, wherein the biopolymer is selected from a group consisting of: nucleic acids, polypeptides, proteins, and analogues thereof.

9. The method of claim 8, wherein the biopolymer is a polynucleotide.

10. The method of claim 9, wherein the polynucleotide is cDNA.

11. The method of claim 1, wherein the step of providing the biopolymer comprises providing a solution of the biopolymer; and the step of contacting comprises:

(a) placing an aliquot of the biopolymer solution on the modified substrate; and

(b) air-drying the substrate to directly adsorb the biopolymer on the surface of the substrate.

12. The method of claim 11, wherein the modified substrate is an amino-modified substrate.

13. The method of claim 12, wherein the amino-modified substrate is aminopolypropylene.

14. The method of claim 11, wherein the amount of the biopolymer applied to the substrate ranges from about 10^{-20} to about 10^{-14} moles.

15. The method of claim 14, wherein the biopolymer is a polynucleotide, and the amount of polynucleotide is about 10^{-18} moles.

16. The method of claim 11, wherein the aliquot is from about 0.1 nL to about 500 nL.

17. The method of claim 16, wherein the biopolymer is a polynucleotide, and the aliquot is about 10 nL.

18. The method of claim 11, wherein the air-drying step is conducted for a period ranging from about 5 minutes to about 60 minutes.

19. The method of claim 18, wherein the air-drying step is conducted for a period of about 15 min.

20. The method of claim 11, wherein a plurality of the biopolymers are placed and adsorbed on the surface of the modified substrate in an array.

21. The method of claim 20, wherein the modified substrate is an amino-modified substrate.

22. The method of claim 21, wherein the amino-modified substrate is amino polypropylene.

23. The method of claim 11, further comprising a step of exposing the assay article to a reagent.

24. The method of claim 23, wherein the reagent is selected from a group consisting of: ammonium hydroxide, ethanol, and protein.

25. The method of claim 24, wherein the protein is casein.

26. The method of claim 1, wherein the substrate is made of polypropylene or polyethylene.

27. The method of claim 26, further comprising a step of modifying the substrate surface prior to the contacting step, wherein the step of modifying the substrate comprises introduction of a functionality selected from a group consisting of: amino, carboxyl, hydroxyl, thiol, and their derivatives.

28. The method of claim 27, wherein the functionality is an amino group.

29. A method of detecting a target biopolymer contained in a sample comprising the steps of:

(a) providing a modified substrate;

(b) providing a probe biopolymer that can form a complex with the target biopolymer;

(c) contacting either the probe or target biopolymer with a surface of the substrate under a condition sufficient for a direct adsorption of either the probe or target biopolymer on the substrate surface to form a probe assay article or a target assay article, respectively;

(d) contacting the probe assay article with the target biopolymer, or contacting the target assay article with the probe biopolymer under a condition that allows the formation of a complex comprising the probe and the target biopolymers; and

(e) detecting and determining the presence of the complex as a measurement for the presence or the amount of the target biopolymer contained in the sample.

30. The method of claim 29, wherein the substrate is an amino-modified substrate.

31. The method of claim 30, wherein the amino-modified substrate is amino polypropylene.

32. The method of claim 29, wherein each of the target and the probe biopolymers are selected from a group consisting of nucleic acids, polypeptides, proteins, and analogues thereof.

33. The method of claim 29, wherein the target biopolymer is a target polynucleotide, and the probe biopolymer is a polynucleotide that is complimentary to the target polynucleotide.

34. The method of claim 33, wherein the complex further comprises a reporter selected from the group consisting of dyes, chemiluminescent compounds, enzymes, fluorescent compounds, metal complexes, magnetic particles, biotin, haptens, radio frequency transmitters, and radioluminescent compounds.

35. The method of claim 34, wherein the biopolymer is a polynucleotide, the reporter is biotin, and the method of claim 29 further comprises a step of incubating the complex adsorbed on the surface of the modified substrate with streptavidin-alkaline phosphatase and an ELF reagent for developing a fluorescent signal prior to the detecting step.

36. The method of claim 35, wherein the modified substrate is an amino-modified substrate.

37. The method of claim 36, wherein the amino-modified substrate is amino polypropylene.

38. The method of claim 29, wherein the same or different probe or target biopolymers are adsorbed on discrete, isolated areas on the surface of the aminated polypropylene substrate to form an array.

39. The method of claim 38, wherein the detecting step comprises recording the signal with a confocal array reader.

40. The method of claim 39, wherein the signal is a fluorescence and the confocal array reader is a CCD camera.

41. The method of claim 29, wherein the substrate is made of polypropylene or polyethylene.

42. The method of claim 41, further comprising a step of aminating the surface of the substrate prior to the step of contacting.

43. An assay article, comprising:

a substrate having a functionality selected from a group consisting of amino, carboxyl, hydroxyl, thiol and their derivatives, and

a biopolymer directly adsorbed on a surface of the substrate.

44. The assay article of claim 43, wherein the substrate is in a form selected from the group consisting of foams, filaments, threads, sheets, films, slides, gels, membranes, beads, plates, and planar devices having discrete isolated areas in the form

of wells, troughs, pedestals, hydrophobic or hydrophilic patches, die-cut adhesive reservoirs, or other physical barriers to fluid flow.

45. The assay article of claim 43, wherein the biopolymer is selected from a group consisting of nucleic acids, polypeptides, proteins, and analogues thereof.

46. The assay article of claim 45, wherein the biopolymer is a protein or a polynucleotide.

47. The assay article of claim 43, wherein the substrate is made of polypropylene or polyethylene.

48. The assay article of claim 47, wherein the substrate is aminated.

49. The assay article of claim 47, wherein the biopolymer is polynucleotide and the substrate is in a form of a slide.

50. The assay article of claim 49, wherein the length of the polynucleotide is in a range from about 20 bp to about 10 kb.

51. The assay article of claim 43, wherein a plurality of the same or different biopolymers are attached to discrete, isolated areas of the substrate surface by direct adsorption to form an array.

52. A test kit for detecting a target biopolymer contained in a sample comprising:

an aminated polypropylene substrate; and

a probe biopolymer directly adsorbed on a surface of the substrate, wherein the probe biopolymer forms a complex with the target biopolymer.

53. The test kit of claim 52 further comprising a reporter selected from the group consisting of dyes, chemiluminescent compounds, enzymes, fluorescent compounds, metal complexes, magnetic particles, biotin, haptens, radio frequency transmitters, and radioluminescent compounds.

54. The test kit of claim 53, wherein a plurality of the same or different probe biopolymers are attached to discrete, isolated areas of the substrate surface by direct adsorption forming an array.

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